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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/760,149 | 01/17/2004 | Walter D. Mieher | KLA1P119 | 7190 |
| 22434 | 7590 | 08/23/2006 | EXAMINER | |
| BEYER WEAVER & THOMAS, LLP P.O. BOX 70250 OAKLAND, CA 94612-0250 | | | VALENTIN, JUAN D | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2877 | |

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/760,149

Applicant(s)

MIEHER ET AL.

Examiner

Juan D. Valentin II

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>01/17/04, 04/20/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

1. The claimed invention is directed to non-statutory subject matter. With regards to claims 14, 15, & 18, merely identifying; determining; devising; evaluating; analyzing; etc... is not sufficient to constitute a tangible result, since the outcome of the method steps has not been used in a disclosed practical application nor made available in such a manner that its usefulness in a disclosed practical application is realized. See OG Notices: 22 November 2005, "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility".

Practical application that produces a useful, concrete, and tangible result under Section IV determines whether the claimed invention complies with the subject matter eligibility requirement of 35 U.S.C. Sec. 101, sentence 3, in the OG Notice from 22 November 2005 states "In determining whether the claim is for a "practical application," the focus is not on whether the steps taken to achieve a particular result are useful, tangible, and concrete, but rather that the final result achieved by the claimed invention is "useful, tangible, and concrete."

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 20 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant has claimed a first grating structure with a first parameter and further claims a second grating structure with a first parameter. Examiner is unsure whether each grating has the same first parameter or if the first parameter for each grating is different from the first parameter of the other grating? Applicant is asked to please amend the claim in order to clarify this issue.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-27 rejected under 35 U.S.C. 103(a) as being unpatentable over Littau et al. (USPN '930 B1, hereinafter Littau) in view of Singh et al. (USPN '422 B2, hereinafter Singh).

Claims 1, 2, 4, 9, 10, 11, 12, 13

Littau discloses obtaining scatterometry signals by performing scatterometry measurements on at least two grating structures (Fig. 2, abstract, col. 9, lines 5-35, claims 12 & 13) with different process responses, said at least two gratings structures (Figs. 1A-1C) being located within the same field and in close proximity to one another, comparing (determining the difference between the two signals – claims 2, 9, 10, 11) scatterometry signals from said at least two different grating structures in order to ascertain information about one or more process

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parameters used to form said at least two grating structures (col. 3, lines 41-col. 4, line 11, col. 7, lines 1-22, col. 8, lines 27-30, col. 9, lines 5-35, col. 10, lines 4-16, col. 10, line 39-col. 11, line 65, col. 13, lines 6-22, col. 6, lines 34-50, & col. 14, lines 5-11).

Littau substantially teaches the claimed invention except that it fails to show controlling said one or more process parameters based on said comparison of effective values (claim 4).

Singh shows that it is known to provide controlling said one or more process parameters based on said comparison (col. 3, lines 8-20, col. 4, line 59-col. 5, line 3, & col. 10, lines 24-42) for a scatterometry system. It would have been obvious to someone of ordinary skill in the art to combine the device of Littau with the process control feedback of Singh for the purposes of providing adjustments to the grating fabrication process parameters to optimize the grating formation (Singh, col. 10, lines 39-42).

Claims 3 & 5

Littau as applied above further discloses determining the effective values of said one or more process parameters by comparing the difference to calibration data (col. 13, lines 34-43).

Claim 6

Littau as applied above further discloses performing scatterometry measurements on a plurality sets of grating structures with different process responses for varying process conditions, calculating the difference between the scatterometry signals for each set of grating structures, and mapping the differences as a function of the varying process conditions (Figs. 5-9, col. 10, line 39-col. 11, line 18, col. 11, line 54-col. 13, line 50).

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Claims 7 & 8

Littau as applied above further discloses controlling said one or more process parameters in accordance with whether or not the difference is within said predetermined control limit (col. 10, line 39-col. 11, line 18).

Claim 14

Littau discloses obtaining scatterometry signals for at least two grating structures, each of the grating structures producing a scatterometry signal having different sensitivities to one or more process parameters which are desired to be controlled, comparing scatterometry signals in order to ascertain information about one or more process parameters used to form the different grating structures, each of the scatterometry targets being configured to produce different scatterometry signals, the differences being attributable at least in part to one or more process parameters (col. 3, lines 41-col. 4, line 11, col. 7, lines 1-22, col. 8, lines 27-30, col. 9, lines 5-35, col. 10, lines 4-16, col. 10, line 39-col. 11, line 65, col. 13, lines 6-22, col. 6, lines 34-50, & col. 14, lines 5-11).

Claims 15, 16, & 17

Littau discloses forming a target group at a plurality of focus settings, the target group containing two or more targets with different sensitivities to focus, obtaining scatterometry signals for each of the targets in the target groups, calculating difference signals for each target group (claims 16 & 17, col. 11, lines 4-17), forming a relationship between the difference signal or a property of the difference signal to the focus settings, and determining optimal or best focus using the relationship (col. 3, lines 41-col. 4, line 11, col. 7, lines 1-22, col. 8, lines 27-30, col. 9, lines 5-35, col. 10, lines 4-16, col. 10, line 39-col. 11, line 65, col. 13, lines 6-22, col. 6, lines 34-50, & col. 14, lines 5-11).

Claims 18, 19, 20, & 21

Littau discloses measuring two or more measurable patterns that are configured to produce different scatterometry signals, the differences between the signals being due at least in part to one or more process parameters used to create the measurable patterns, and analyzing the difference signals to determine the best process conditions for a photolithographic process, the analyzing step including extracting information about one or more process parameters out of the difference signals (col. 3, lines 41-col. 4, line 11, col. 7, lines 1-22, col. 8, lines 27-30, col. 9, lines 5-35, col. 10, lines 4-16, col. 10, line 39-col. 11, line 65, col. 13, lines 6-22, col. 6, lines 34-50, & col. 14, lines 5-11).

Claim 22

Littau as applied above further discloses wherein the grating structures are printed on the surface of a work piece, the surface representing an exposed layer of photoresist, a partially developed layer of photoresist, a developed layer of photoresist, or an underlayer of the work piece (col. 9, lines 5-36).

Claim 23

Littau as applied above further discloses wherein the grating structures are located within the scribe line, device structure or within both the scribe line and the device structure (col. 3, lines 22-24).

Claims 24-27

Littau as applied above further discloses (col. 3, lines 41-col. 4, line 23, col. 9, line 5-col. 11, line 40).

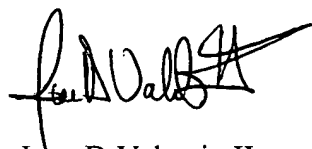
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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan D. Valentin II whose telephone number is (571) 272-2433. The examiner can normally be reached on Mon.-Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Juan D Valentin II
Examiner 2877
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August 14, 2006



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